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ABSTRACT

Four reasoning skills help explain the processes that students need to use in completing various study skills exercises: (1) classification--the process that a student uses to name a body of information or to associate a bit of information with a larger chunk of information; (2) sequencing--the process by which a student organizes information into logical steps or patterns; (3) evaluation--the process by which the student judges the relative merit of a particular objective, work, or idea; and (4) synthesis/creation--the skill a student must use to create something original. These reasoning skills, and the understanding that there are various levels of sophistication inherent in each, have tremendous teaching applicability. When teaching students to take notes, use the SQ3R study system for analyzing texts, or write essay exams, instructors should analyze the activities with respect to the reasoning skills employed; clarify for students the skills they should be using; and evaluate student performance in terms of weaknesses in particular reasoning skills. The task of study skills instructors is now to elaborate on this basic list of four reasoning skills to provide a hierarchy of skills within each reasoning process. (HB)

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Reasoning: The Deep Structure of Study Skills Instruction

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Abstract

Reasoning: The Deep Structure of Study Skills Instruction

While writing Integrated College Study Skills (Sotiriou, 1984), I came upon four reasoning skills that helped explain the processes that students need to use in completing the various exercises in the text. These four reasoning skills are: classification, sequencing, evaluation, and synthesis/ creation. In considering how these reasoning skills apply to various study skills exercises, I came upon the useful generalization that the more reasoning skills are in operation, the more difficult the assignment tends to be. These four reasoning skills can be used by the instructor and student alike to gauge the difficulty level of an assignment and to divide up an assignment into identifiable tasks. It seems that reasoning skills in basic skills instruction have tremendous pedagogic possibilities for developmental instructors in this decade.

REASONING: THE DEEP STRUCTURE OF STUDY SKILLS INSTRUCTION

Having completed a study skills text that attempted to integrate skills (Sotiriou, 1984), I came to identify four reasoning skills that explained the processes students needed to use in completing the reading, listening, and writing exercises of the text. As I continue to analyze these four skills, I am finding various ways by which these skills can benefit the study skills instructor in the teaching of various units as well as the student completing the study skills exercises. Identifying these four reasoning skills and applying them to study skills exercises, I suspect, is only the beginning phase in the development of a critical thinking or reasoning base for study skills instruction.

The four reasoning skills that I identified are: 1) classification, 2) sequencing, 3) evaluation, and 4) synthesis/creation. I will very briefly explain each term , but a far more thorough explanation of these four processes can be found in the teacher's resource manual to my text (Sotiriou, 1984, pp. 4-11). Classification is the process that a student uses to name a body of information or to associate a bit of information to a larger chunk of information. A student, for instance, who identifies the word "great" as an adjective and compares an adjective to the other parts of speech is employing the skill of classification. In sequencing, the second significant reasoning process, a student organizes information into logical steps or patterns. A students who presents a series of axioms and theorems to solve a geometric proof is sequencing information to arrive at a correct answer. Third, a student uses the evaluation process to judge the relative merit of a particular object, work, or idea. Evaluation, for example, is a necessary process that a student employs in writing a film critique. Finally, synthesis/ creation is the skill students must use when they create something original. Writing an essay, in the strict sense of

this reasoning term, is an example of synthesis/creation. No two student essays are exactly alike, and ultimately each student essay expresses the unique voice and style of its author.

What struck me as most interesting about these four reasoning skills are the various levels of sophistication inherent in each reasoning process. A child who calls a teacher Miss Jones and later calls her teacher is demonstrating the reasoning process of classification, while a four year old who counts from one to five is employing on a very basic level the ability to sequence. On a much higher level of sophistication, on the other hand, Samuel Taylor Coleridge's reviews of Shakespeare's plays are an example of the evaluation process, while Tolstoy's War and Peace is clearly an example of synthesis/creation. What I ultimately realized from analyzing this wide spectrum of tasks and works employing these four reasoning skills is that reasoning, like speech, is a human skill, employed by all humans at various levels of sophistication. This realization gave to reasoning skills a tremendous teaching applicability because I could demonstrate to each of my students their relationship as thinkers to more advanced, often psychologically threatening works that they were assigned to read and attempted to analyze.

How To Use Reasoning Skills in Teaching Study Skills

Having identified these skills, I realized the tremendous potential these reasoning skills had in explaining various study skills exercises. The instructor could analyze a particular study skills activity in terms of the various reasoning skills employed. Students might be more successful in completing an exercise if they know what reasoning skills they needed to employ. Further, I came upon the useful generalization that the more reasoning skills one employed, the more difficult the

assignment tended to be.

What reasoning skills, for example, does a student need to use in answering the following question?

Write the general classification or main idea for the following details in this outline.

I. _____

A. classical

B. jazz

C. rock and roll

D. folk

On the surface, the question is asking for students to determine main ideas from the details presented. But on a deeper level, the question is dealing with the classification process, where students are categorizing information into general and specific compartments. Knowing this deeper process allows an instructor to be more exhaustive in analyzing student errors. A student consistently missing such questions needs more work in categorizing specific and general information. For the student who has been taught something about the reasoning skill of classification, the above question becomes part of a continuum of classification skills. The student would likely see that the above question is part of the same kind of critical thinking as knowing that Mrs. Jones is both a woman and an instructor. Reasoning skills and study skills then become a less threatening, more integrated part of a student's thinking.

Reasoning skills can also prove beneficial for the instructor and the student in the teaching and the learning of notetaking skills. In an assignment where a student needs to listen to a lecture, the student needs 1) to condense information and 2) to select main ideas and significant details. Two reasoning skills are in operation--classification (determining main ideas and details) and evaluation

(selecting significant details). If a student has taken incomplete notes on a particular assignment, the instructor can check to see whether the error lies in classifying information or in evaluating it. With these two reasoning skills as a base, the instructor can more efficiently diagnose the student's errors, deciding whether more basic work in classifying information or in evaluating information is necessary before the assignment can be completed successfully. For the students, simply knowing that two reasoning skills are in operation will give them some sense for the difficulty level of the notetaking assignment. Often part of a study skills student's frustration is not seeing how one assignment is more difficult than another.

Reasoning skills can just as effectively be applied to analyzing a student's use of the SQ3R study system in mastering text material. In using the SQ3R on text material, students employ all four reasoning skills: 1) classifying information into main ideas and major details, 2) sequencing the study process through the steps in SQ3R, 3) evaluating what are important questions to formulate in their recites; and if students create study maps to synthesize the text material, they are 4) employing the synthesis/ creation reasoning skill, transforming verbal material into an original visual pattern. Seeing how complex the "deep structure" of this assignment is will give a study skills instructor specific reasons for demonstrating the difficulty level of the study reading process. The instructor and the student can therefore see why the SQ3R cannot be mastered in one class session. Further, instructors can target specific learning difficulties that their students face in the SQ3R process by isolating certain reasoning skills that have not been mastered. From the students' point of view, understanding the various critical processes needed to read effectively

text material will give them an objective sense for the complexity of the task. Students can also see how previously mastered reasoning skills are also employed in the SQ3R system. Being aware of the similarity of reasoning skills employed in various tasks will therefore provide students with a more integrated attitude toward their study skills assignments.

Finally, these same four reasoning skills can be employed when a study skills instructor discusses writing the essay exam, perhaps the most difficult skill for a student to master in a study skills course. Again, all four reasoning skills are in operation. In preparing a pre-writing outline, students need to classify information into main ideas and major details. Then, they need to follow a set pattern of writing sequences in completing the essay (preparing the outline, writing, and revising). In composing the essay, of course, students need to evaluate the information in order to select the most significant details. Finally, the act of writing is an example of synthesis/creation; information is often reordered, and the final response is an original statement in the style of the writer. Knowing that these four reasoning skills form the underpinnings of an essay response will help the instructor, as in evaluating the SQ3R process, to diagnose the kinds of writing problems that students have. For the students, merely knowing that all reasoning skills are employed in composing an essay response will give them a sense for the complexity of the writing process. Further, basing writing on reasoning skills clearly separates the critical thinking process involved in writing from issues of mechanics. All too often, students are hesitant to write because of their fear of making errors in grammar and usage. Finally, writing from a reasoning base allows the student to see how the act of writing shares similar reasoning skills that are used in reading and outlining exercises.

The Future of Reasoning Skills in Basic Skills Instruction

It seems that a reasoning skills-critical thinking pedagogy for a study skills course and other basic skills courses will provide a workable framework for the instructor and students to explore in this decade. The task before study skills and basic skills instructors is to elaborate on this basic list of four reasoning skills, to begin to provide a hierarchy of skills to master in each reasoning process. Ideally, in this way, students deficient in a particular reasoning skill should have a resource of sequentially more challenging skills to refer to as they complete a study skills course. Noam Chomsky and other generative grammarians have provided a continuum of language aquisition and sentence building skills from childhood to adulthood, and reading specialists have identified specific reading skills and have provided levels of instruction for each discrete skill. It will be, I believe, the challenge of basic skills instructors engaged in critical thinking instruction to provide a similar hierarchy of reasoning skills and exercises that will advance the critical thinking skills of their students, abilities that are inherent in the way all of us interpret the world.

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